

## REMARKS/ARGUMENTS

Claims 1-66 are pending in the application. Claims 2-21, 23-46, 48-56, and 58-66 are amended herein. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

### Drawings

In page 2 of the office action, the Examiner stated that "Figures 1-12 should be designated by a legend such as –Prior Art– because only that which is old is illustrated." The Applicant requests clarification from the Examiner as to the support for the assertion that Figures 1-12 illustrate "only that which is old." In particular, the Applicant requests citation of prior art teaching the subject matter illustrated in each of these figures.

The Applicant notes that Figures 1-12 are described in the Detailed Description section of the patent application, not in the Background of the Invention section. The Applicant admits that Figures 1-4 of the present application are identical to Figures 1-4 of Vella-Coleiro (US Publ. No. 2004/0264596 A1). However, as described below, Vella-Coleiro is not prior art against the present application.

### Claim Rejections - 35 USC 112

On pages 2-3, the Examiner requested correction of claims 2-21, "21-46," "47-56," and "57-66." The Applicant assumes that the Examiner intended to cite claims 2-21, 23-46, 48-56, and 58-66. The Applicant has amended those claims as suggested by the Examiner.

On page 3, the Examiner rejected claims 1 and 22 under 35 U.S.C. 112, second paragraph, as being indefinite. In particular, the Examiner stated that "It is not clear which so called 'index generator' and 'index adjuster' from the drawing/specification." In response, the Applicant submits that envelope detectors 1318 and 1324 of Fig. 13 are examples of the index generator of claim 22, and offset pointers 1320 and 1326 of Fig. 13 are examples of the index adjustor of claim 22.

As described, for example, on page 16, lines 21-28, of the specification, envelope detector 1318 measures the power of input signal 1302. Depending on the particular implementation, envelope detector 1318 may be similar to index-calculating module 28 of Fig. 2 or envelope detector 902 of Fig. 9. The detected power level is applied to offset pointer module 1320, which adds an appropriate offset value to the detected power level. The resulting offset power level is then used as an index into one or more LUTs 1322 to retrieve one or more pre-distortion parameters (e.g., A and B of Fig. 5). These pre-distortion parameters are then applied within pre-distorter 1304 to generate pre-distortion components 1306. The specification provides analogous teaches for envelope detector 1324 and offset pointer 1326.

The Applicant submits therefore that the rejections of claims under Section 112, second paragraph, have been overcome.

### Claim Rejections - 35 USC 102

On page 4, the Examiner rejected claims 1-36 and 41-66 under 35 U.S.C. 102(e) as being anticipated by Vella-Coleiro. On page 4, the Examiner also objected to claims 37-40 as being dependent upon a rejected base claim, but indicated that those claims would be allowable if rewritten in independent form. For the following reasons, the Applicant submits that all of the pending claims are allowable over Vella-Coleiro.

## Claims 1 and 22

Claim 22, for example, is directed to apparatus for processing an input signal for application to an amplifier to generate an amplified output signal. The claimed apparatus comprises an index generator, an index adjuster, a look-up table, and a pre-distorter. The index generator generates an index into a look-up table based on the input signal. The index adjuster adjusts the index to compensate for changes in operating characteristics of the amplifier over time. The look-up table provides one or more pre-distortion parameters based on the adjusted index. The pre-distorter pre-distorts the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier. As described below, the Applicant submits that Vella-Coleiro does not teach or even suggest such a combination of features.

In rejecting claim 22, the Examiner cited:

- o Index calculating module 28 in Fig. 2 of Vella-Coleiro as an example of the index generator of claim 22;
- o Processing module 32 in Fig. 2 of Vella-Coleiro as an example of the index adjuster of claims 22;
- o Look-up table 30 in Fig. 2 of Vella-Coleiro as an example of the look-up table of claim 22; and
- o Pre-distorter 12 in Fig. 1 of Vella-Coleiro as an example of the pre-distorter of claim 22.

The Applicant admits that index calculating module 28, look-up table 30, and pre-distorter 12 of Vella-Coleiro are analogous to the index generator, look-up table, and pre-distorter of claim 22. The Applicant submits, however, that it is improper to "read" processing module 32 of Vella-Coleiro as an example of the index adjuster of claim 22.

According to claim 22, the index adjuster adjusts the index to compensate for changes in operating characteristics of the amplifier over time. For example, in the exemplary embodiment of Fig. 13, offset pointer 1320 adds an appropriate offset value to the index value (i.e., the power level) generated by the index generator (i.e., envelope detector 1318), where the adjusted index value (i.e., the offset power level) is used as the index to retrieve data from one or more look-up tables. See page 16, lines 23-27. Vella-Coleiro provides no such teachings about an index adjuster.

As shown in Fig. 2, for example, the index value from Vella-Coleiro's index calculating module 28 is applied directly to look-up table 30; it is not applied to processing module 32. As such, there is no way for Vella-Coleiro's processing module 32 to adjust the index value generated by the index calculating module.

As described, for example, in paragraph [0031] of Vella-Coleiro, processing module 32 updates the values of parameters A and B stored in look-up table 30, it does not adjust the index value applied to that look-up table to retrieve those parameters. There is simply no teaching or even suggestion in Vella-Coleiro that processing module 32 adjusts an index generated by an index generator. As such, it is improper to interpret Vella-Coleiro's processing module 32 as being an example of the index adjuster recited in claim 22.

In view of the foregoing, the Applicant submits that claim 22 is not anticipated or even obviated by Vella-Coleiro. The Applicant submits therefore that claim 22 is allowable over Vella-Coleiro. For similar reasons, the Applicant submits that claim 1 is allowable over Vella-Coleiro. Since claims 2-21 and 23-46 depend variously from claims 1 and 22, the Applicant submits that those claims are also allowable over Vella-Coleiro. In view of the foregoing, the Applicant submits that the rejections of claims 1-36 and 41-46 under 102(e) have been overcome.

#### Claims 47 and 57

Claim 57 is directed to apparatus for processing an input signal for application to an amplifier to generate an amplified output signal. The recited apparatus comprises a look-up table, a pre-distorter, and a controller. The look-up table provides one or more pre-distortion parameters based on the input signal. The pre-distorter pre-distorts the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier. The controller automatically updates the look-up table by (1) generating a measure based on current operations of the amplifier, (2) applying the measure to one or more algebraic equations to generate one or more parameter values, and (3) applying the one or more parameter values to one or more polynomials to update the look-up table. As described below, the Applicant submits that Vella-Coleiro does not teach or even suggest such a combination of features.

In rejecting claim 57, the Examiner cited:

- o Look-up table 30 in Fig. 2 of Vella-Coleiro as an example of the look-up table of claim 22; and
- o Pre-distorter 12 in Fig. 1 of Vella-Coleiro as an example of the pre-distorter of claim 22.

The Applicant admits that look-up table 30 and pre-distorter 12 of Vella-Coleiro are analogous to the look-up table and pre-distorter of claim 57.

Vella-Coleiro does teach a technique for updating his look-up table, but that technique is different from the technique explicitly recited in claim 57. According to the Examiner, Vella-Coleiro's pre-distorter has "the functions thereof (see [0018] for polynomial equation, [0033])." Notwithstanding this confusing statement by the Examiner, the Applicant submits that Vella-Coleiro does not teach or even suggest the technique for updating a look-up table that is explicitly recited in claim 57.

In particular, according to claim 57, the controller generates a measure based on current operations of the amplifier. In the exemplary embodiment described in the specification, the average input signal power is an example of the measure recited in claim 57. See, e.g., page 21, lines 16-17.

The controller of claim 57 applies the measure to one or more algebraic equations to generate one or more parameter values. In the exemplary embodiment, the one or more parameter values are the parameters  $C_{10}$ ,  $C_{11}$ ,  $C_{12}$ , and  $C_{13}$ , which are generated using algebraic representations of the piece-wise linear curves shown in Fig. 16. See page 21, lines 19-21.

The controller of claim 57 applies the one or more parameter values to one or more polynomials to update the look-up table. In the exemplary embodiment, the one or more polynomials are Equations (15) and (16), which are used to update the look-up table entries X and Y. See page 21, line 21-22.

Vella-Coleiro does not teach or even suggest such a combination of features for updating his look-up table.

In view of the foregoing, the Applicant submits that claim 57 is not anticipated or even obviated by Vella-Coleiro. The Applicant submits therefore that claim 57 is allowable over Vella-Coleiro. For similar reasons, the Applicant submits that claim 47 is allowable over Vella-Coleiro. Since claims 48-56 and 58-66 depend variously from claims 47 and 57, the Applicant submits that those claims are also allowable over Vella-Coleiro. In view of the foregoing, the Applicant submits that the rejections of claims 48-66 under 102(e) have been overcome.

Vella-Coleiro is Not a Proper Prior-Art Reference

As described above, Vella-Coleiro is not a proper 102(e) reference against any of the pending claims. Moreover, since Vella-Coleiro and the claimed invention were commonly owned at the time the claimed invention was made or subject to an obligation of assignment that would establish common ownership, Vella-Coleiro is also not a proper 103 reference against any of the pending claims.

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

Date: 10/28/05  
Customer No. 22186  
Mendelsohn & Associates, P.C.  
1500 John F. Kennedy Blvd., Suite 405  
Philadelphia, Pennsylvania 19102

Steve Mendelsohn  
Steve Mendelsohn  
Registration No. 35,951  
Attorney for Applicant  
(215) 557-6657 (phone)  
(215) 557-8477 (fax)